SPATIAL GEOLOGICAL DATABASES AND DATA MODELS

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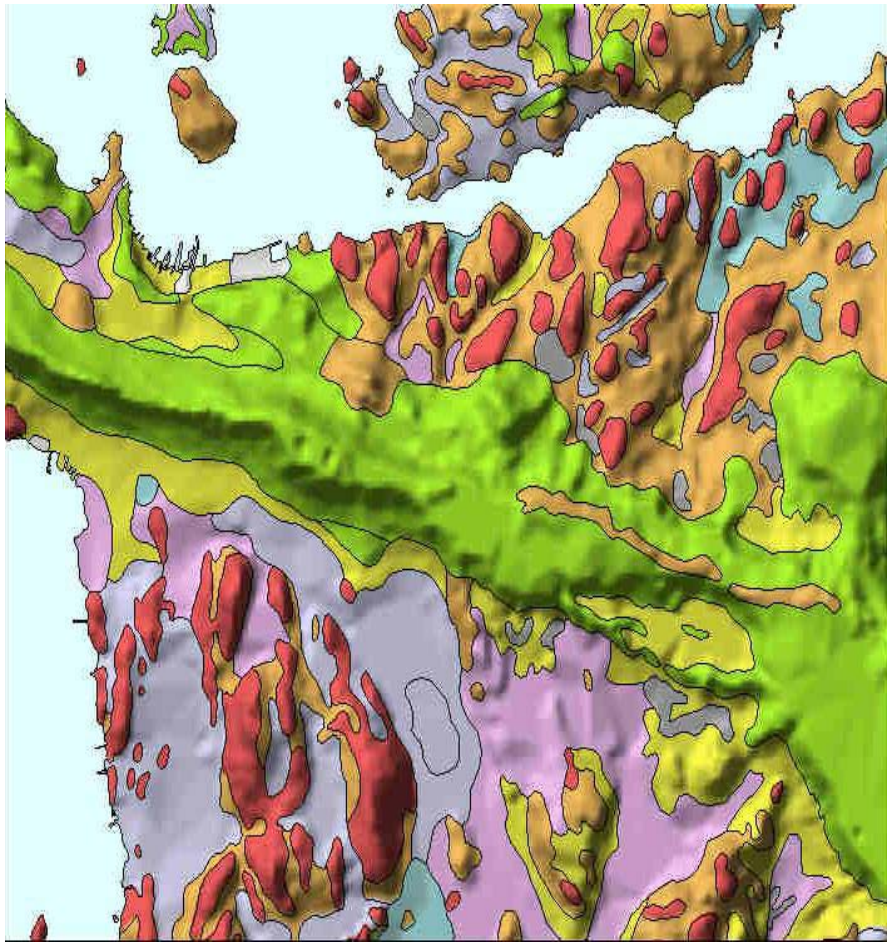


Spatial data management

vision 2005

- Spatial data will be in access as nation-wide, uniform databases with adequate quality descriptions and other metadata
- Positioning errors will be minimized – both in the field and in the office - by using GIS user interfaces and GPS equipment
- Attribute data errors will be reduced by database rules and value domains

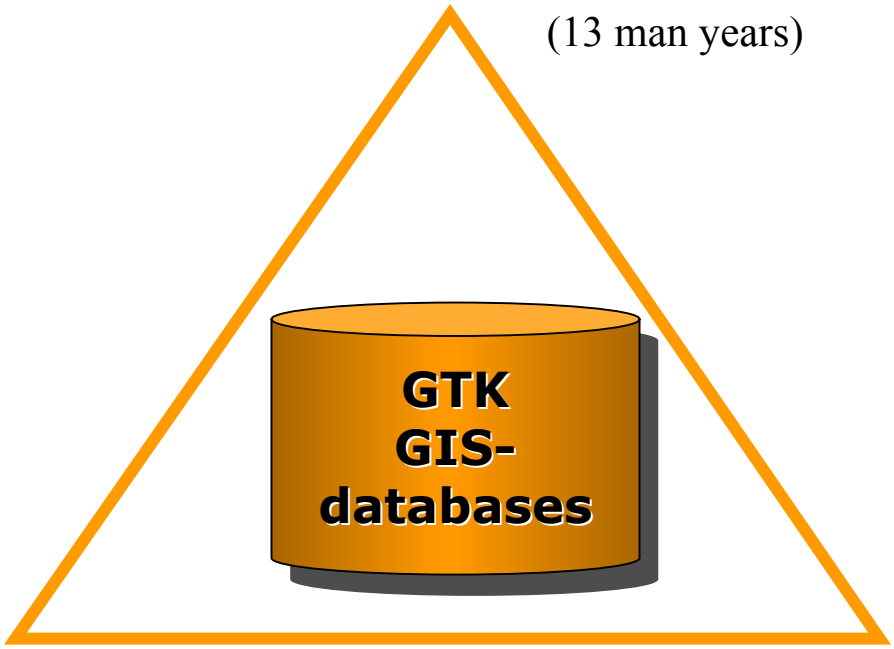
Improving Spatial Data Management

GTK Projects

GeoKernel Project

2000 – 2004

(13 man years)



Quality Project

1999 – 2003 / 15 workgroups

GeoData Project

2000 – 2003 100 man years

GeoKernel Project

overall objective

- To improve availability and access to data of GTK
- To increase use of geological spatial data

GeoKernel Project

in a nutshell (1)

- Duration 5 years (2000 – 2004), 13 systems analysts/developers
- GIS-based data management system and centralized GIS database will be established for geological field-data
- New data models
- The system is built on Oracle 9i database, where both locational and attribute information will be saved as nation-wide themes through ArcSDE gateway (spatial server)
- Numerical data will be organized
  - ✓ in uniform format
  - ✓ areally continuous nation-wide themes
  - ✓ described and classified by quality attributes

GeoKernel Project

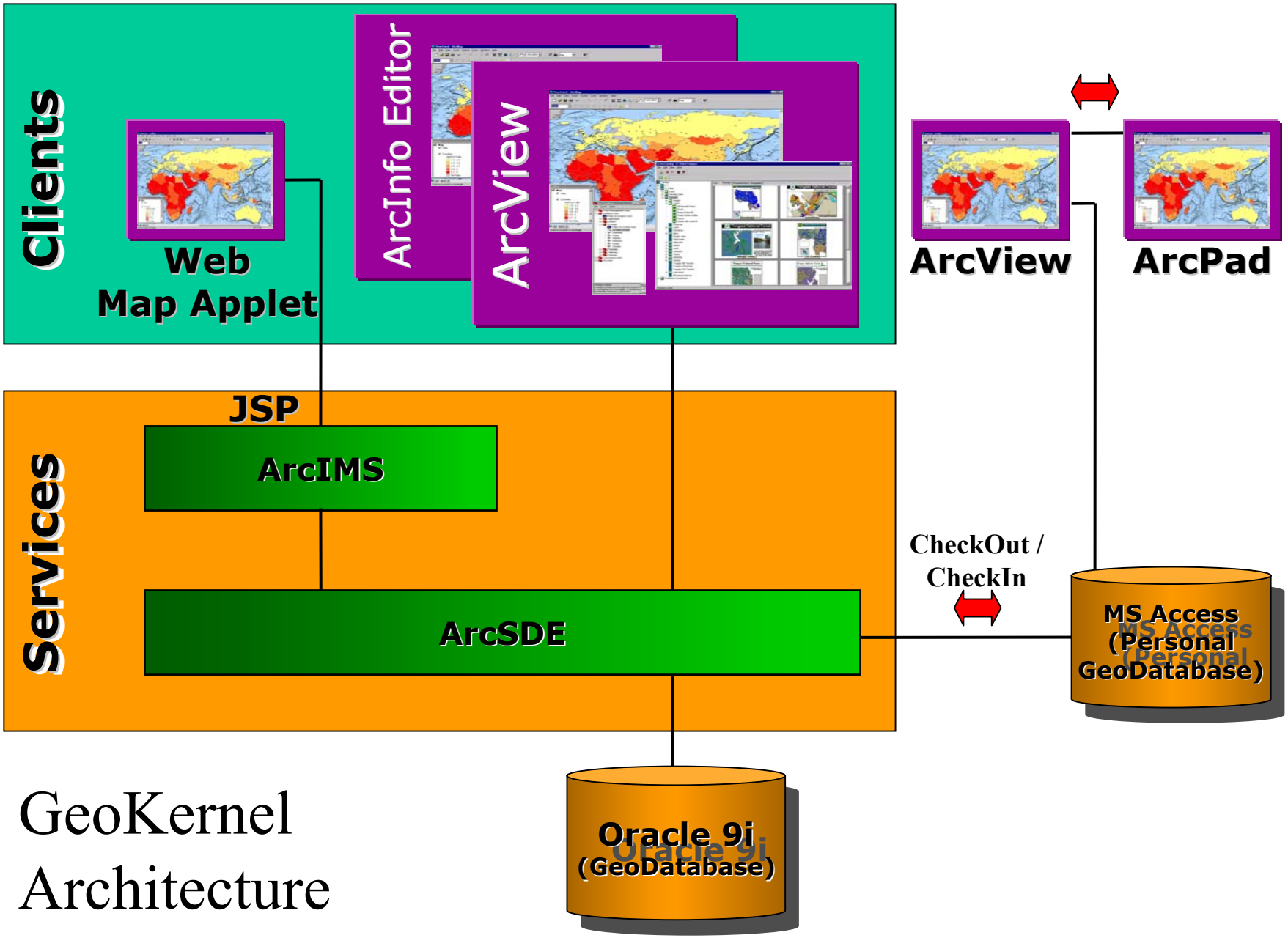
in a nutshell (2)

- Work will be minimized by using
  - ✓ rugged computers with data capture programs and GPS
  - ✓ GIS-user interfaces
  - ✓ GIS analysis and functions
- GIS user interfaces and GTK basic applications are programmed
  1. Field data capture
  2. Data Editing
  3. Data query and reporting
- GTK Quality system requirements for data collection and management will be taken in consideration

GeoKernel Project

current status

- 11/2003: Completed subsystems: soil mapping, sand and gravel deposits, mires, geotechnical boreholes
- Under construction: bedrock mapping (outcrops and boreholes), geochemical analysis, physical analysis, field geophysics
- 12/2004: GeoKernel technically established
- 1/2005 – 8/2006 GeoKernel implementation and testing phase



GeoKernel Architecture

GeoKernel

Corporate Data Model

- National approach -> data model reflects finnish data capture and mapping traditions
- Thematic technical working groups coordinated by GeoKerel project
  - Spatial database structures are based on the geological object models: quaternary geology and bedrock geology (reports 1998 – 1999, GTK)
  - Geological terms (glossary)
- New UML data models
- National classification schemes
  - codes for Quaternary objects (features)
  - soil types
  - mire types
  - rock types (mainly based on common standards: IUGS…)
  - Geotechnical standards

GeoKernel

Data Access and Delivery

- In-house access to spatial vector databases and feature editing with concurrent GIS-licenses
- Intranet On-line access to spatial databases, map server query and reports
- Internet delivery of digital raster map data, restricted Web Services

DATA CAPTURE AND PRODUCTS